REMARKS

The office action of February 2, 2006, has been carefully considered.

It is noted that claims 1-5 are further rejected under 35 U.S.C. 102(b) over GB 1,082,988.

It is respectfully submitted that the claims presently on file differ essentially and in an unobvious, highly advantageous manner from the constructions disclosed in the reference.

Turning now to the reference, it can be seen that GB 1,082,988 discloses a cooled mold for continuous casting of metal. GB'988 has a publication date of 1967. The problem being addressed by GB'988 is that at in 1967 it was not possible to put cooling water bores of small diameter in the wall of the mold. Thus, those skilled in the art in 1967 were compelled to put bores with large diameter in the mold walls, and to fill the large bores with displacement plugs in order to achieve the necessary flow speeds to realize cooling of the mold. The drawback of this is the increased pressure needed for the cooling water and the corresponding higher pumping power.

GB'988 avoids the flow losses and the high pumping load through a specific construction of the plugs (see especially Figs. 12-17).

At no point does GB'988 disclose or suggest that the "cooling channel surfaces are adapted ... in shape, cross-sectional area, ... to the local development of the heat flux density ... in the casting operation...", as in the presently claimed invention.

The necessity of the local, varying matching of the cooling channel surfaces of a mold to the respectively locally controlling temperature of the mold in the casting direction and therewith to the locally varying necessary heat transfer, was not known to those skilled in the art at the time of GB'988. The Examiner's position that GB'988 discloses the presently claimed invention is at best based on impermissible hindsight. In applicant's opinion GB'988 makes no disclosure of the presently claimed invention.

In the presently claimed invention the local heat-transfer cooling channel surfaces are adapted varyingly via geometric designs of the heat-transfer surface areas of a cooling channel or of a group of cooling channels in shape, cross-sectional area,

circumference, boundary surface properties, and orientation relative to the contact surface to the local development of the heat flux density and/or temperature of the contact surface in the casting operation. Such a construction is not disclosed by the reference. Figure 6 of the present application shows the technical background of the invention. The figure shows the heat flux density q_{max} as a function of the height of the mold in a bordered region below the molten metal level. Figure 7 shows the temperature curve T as a function of mold height, with a maximum temperature T_{max} within the region below the molten metal level. The depth R of the grooves in the cooling channel relative to the height of the mold is shown in Figure 7 with the corresponding path of the temperature curve T, which is already to a great degree matched to the path of the heat flux density q in Figure 6. This is discussed in the paragraph beginning on line 5 of page 19 of the application, as follows: "the temperature curve T … shows a temperature maximum T_{max} between points 14 and 15 with R_{max} within the region 13 to 17 of variable depth R of the heat-exchange grooves. The heat-exchange grooves 3 begin at 13 at the height of the molten metal level. The maximum groove depth 4 is reached at point 14. This maximum groove depth continues as far as point 15, and then the groove depth is reduced to the original level as point 16 is approached."

Figure 9 of the present application shows the local heat flux density/temperature in the flow direction of the mold. Also here the maximum heat flux density q_{max} or the maximum temperature T_{max} are shown in the region directly under the molten metal level. In adapting to the shape of the path of the local heat flux density the right side of Figure 9 shows the path of the local heat transfer of the cooling channel surface. This adapting takes place by variable number, form or depth of the cooling channel grooves. Such a construction is not disclosed by the reference.

In view of these considerations it is respectfully submitted that the rejection of claims 1-5 under 35 U.S.C. 102(b) over the above-discussed reference is overcome and should be withdrawn.

Reconsideration and allowance of the present application are respectfully requested.

Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

By _____

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Dated: June 27, 2006

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on June 27, 2006.

By: _____ Date: June 27, 2006
Friedrich Kueffner